

ANN PEARSON

Professor of Biogeochemistry

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Education

B.A.: Chemistry, Oberlin College, Oberlin, Ohio, 1992.

Ph.D.: Marine Chemistry and Geochemistry, MIT/WHOI Joint Program in Oceanography, 2000.

Professional Experience

Professor of Biogeochemistry, 2009- .

Thomas D. Cabot Associate Professor of Earth and Planetary Sciences, Harvard University, 2005-2009.

Assistant Professor of Geochemistry, Harvard University, 2001-2005.

Reinhardt Coastal Research Center (RCRC) Post-doctoral investigator, WHOI, 2000-2001.

EPA Graduate Student Fellow, Woods Hole Oceanographic Institution, 1997-1999.

Graduate Research Assistant, Woods Hole Oceanographic Institution, 1995-97.

Ida M. Green Graduate Student Fellow, MIT, 1994-95.

Volunteer, United States Peace Corps, Ecuador, 1993-94.

Science Teaching Intern, Oberlin College, 1992-93.

Fellowships and Awards

Radcliffe Institute Fellow, 2009-2010.

David and Lucille Packard Foundation Fellowship for Science and Engineering, 2004-2009.

C. G. Rossby Award for Best Dissertation in the Program in Atmospheres, Oceans, and Climate;
Department of Earth, Atmospheric, and Planetary Science; MIT, 2000.

W. D. Carey Annual Science Award for Graduate Students, AAAS, 1999.

American Geophysical Union, Ocean Sciences Section, Outstanding Student Paper Award, 1998 AGU
Spring Meeting, Boston, MA.

EPA STAR Graduate Student Fellowship, 1997-2000.

Geological Society of America, Organic Geochemistry Division, Most Outstanding Paper, 1997.

Ida M. Green Graduate Student Fellowship, MIT, 1994-1995.

Harry Holmes Prize in Chemistry, Oberlin College, 1992.

Sigma Xi, Oberlin College, 1992.

Phi Beta Kappa, Oberlin College, 1991.

Research Interests

- Phylogenetically-directed research on problems in organic geochemistry and environmental microbiology, with emphasis on the evolution of lipid biosynthetic pathways.
- Light isotope ($^{13/12}\text{C}$, $^{14/12}\text{C}$, $^{15/14}\text{N}$, $^{18/16}\text{O}$, and D/H) biogeochemistry, including applications of compound-specific isotopic analysis to:
 - Early diagenesis of sedimentary organic matter; anthropogenic perturbation of organic reservoirs and terrestrial carbon dynamics; bacterial pathways of carbon assimilation; environmental ecology and metabolism of *Bacteria* and *Archaea*.
- New interfaces for mass spectrometry with applications to environmental samples.
- Development of new methods for organism-specific ^{13}C and ^{14}C analysis of DNA and RNA.
- Environmental proteomics.

Selected Publications (of 62)

- HIGGINS MB, ROBINSON RS, CARTER SJ, HUSSON J, PEARSON A (2011) Dominant eukaryotic export production during ocean anoxic events reflects the importance of recycled NH_4^+ . (*In revision, PNAS*)
- CLOSE HG, BOVEE RJ, PEARSON A (2011) Inverse carbon isotope patterns of lipids and kerogen record heterogeneous primary biomass *Geobiology* **9**, 250-265.
- BRADLEY AS, PEARSON A, SAENZ JP, MARX CJ (2010) Adenosylhopane: the first step in biosynthesis of hopanoid side chains. *Org Geochem* **41**, 1075-1081.
- JOHNSTON DA, WOLFE-SIMON FL, PEARSON A, & KNOLL AH (2009) Anoxygenic photosynthesis modulated Proterozoic oxygen and sustained Earth's middle age. *Proceedings of the National Academy of Sciences USA* **106**, 16925-16929.
- MIKUCKI JA, PEARSON A, TURCHYN AV, JOHNSTON DA, ANBAR AD, PRISCU J, SCHRAG D, FARQUHAR J, & LEE PD (2009) A contemporary microbially-maintained ferrous subglacial 'ocean'. *Science* **324**, 397-400.
- PEARSON A & RUSCH D (2009) Distribution of microbial terpenoid lipid cyclases in the global ocean metagenome. *ISME Journal* **3**, 352-363.
- HIGGINS MB, ROBINSON RS, CASCIOTTI KL, MCILVIN MR, & PEARSON A (2009) A method for determining the nitrogen isotopic composition of porphyrins. *Analytical Chemistry* **81**, 184-192.
- KONTNIK R, BOSAK T, BUTCHER RA, BROCKS JJ, LOSICK RM, CLARDY J, & PEARSON A (2008) Sporulenes, heptaprenyl metabolites from *Bacillus subtilis* spores. *Organic Letters* **10**, 3551-3554.
- BOSAK T, LOSICK R, & PEARSON A (2008) A polycyclic terpenoid that alleviates oxidative stress. *Proceedings of the National Academy of Sciences USA* **105**, 6725-6729.
- PEARSON A, FLOOD PAGE SR, JORGENSON TL, FISCHER WW, & HIGGINS MB (2007) Novel hopanoid cyclases from the environment. *Environmental Microbiology* **9**, 2175-2188.
- INGALLS AE, SHAH SR, HANSMAN RL, ALUWIHARE LI, SANTOS GM, DRUFFEL ERM, & PEARSON A (2006) Quantifying archaeal community autotrophy in the mesopelagic ocean using natural radiocarbon *Proceedings of the National Academy of Sciences USA* **103**, 6442-6447.
- BROCKS JJ & PEARSON A (2005) Building the biomarker tree of life. *Reviews in Mineralogy and Geochemistry* **59**, 233-258.
- FISCHER WW, SUMMONS RE, & PEARSON A (2005) Targeted genomic detection of biosynthetic pathways: Anaerobic production of hopanoid biomarkers by a common sedimentary microbe. *Geobiology* **3**, 33-40.
- PEARSON A, BUDIN M, & BROCKS JJ (2003) Phylogenetic and biochemical evidence for sterol synthesis in the bacterium, *Gemmata obscuriglobus*. *Proceedings of the National Academy of Sciences USA* **100**, 15,352-15,357.
- PEARSON A, MCNICHOL AP, BENITEZ-NELSON BC, HAYES JM, & EGLINTON TI (2001) Origins of lipid biomarkers in Santa Monica Basin surface sediment: A case study using compound-specific $\Delta^{14}\text{C}$ analysis. *Geochimica et Cosmochimica Acta*, **65**, 3123-3137.
- EGLINTON TI & PEARSON A (2001) Ocean Process Tracers: Single Compound Radiocarbon Measurements, *In: Encyclopedia of Ocean Sciences*, p.p. 2786-2795, Academic Press, London.
- PEARSON A, MCNICHOL AP, SCHNEIDER RJ, & VONREDEN KF (1998) Microscale AMS ^{14}C measurement at NOSAMS, *Radiocarbon* **40**, 61-75.
- EGLINTON TI, BENITEZ-NELSON BC, PEARSON A, MCNICHOL AP, BAUER JE, & DRUFFEL ERM (1997) Variability in radiocarbon ages of individual organic compounds from marine sediments. *Science* **277**, 796-799.

Editorial Boards

Environmental Microbiology

Geobiology

Frontiers in Aquatic Microbiology

Frontiers in Microbiological Chemistry